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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/389,469	09/03/1999	TAKESHI SAITO		5430

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EXAMINER	
FERRIS, DERRICK W	

ART UNIT	PAPER NUMBER
2663	21

DATE MAILED: 01/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/389,469

Applicant(s)

SAITO ET AL.

Examiner

Derrick W. Ferris

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5,7,9 and 12-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,7,9 and 12-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/05/03 has been entered.

Response to Amendment

2. **Claims 1, 3, 5, 7, 9, and 12-15** as amended are still in consideration for this application. Applicant has amended claims 1 and 14.

3. Examiner **withdraws** the obviousness rejection to *Puri et al.* in view of *Wang et al.* and in further view of *Elaoud et al.* for Office action filed 08/06/03. The rejection has been withdrawn and replaced by a new rejection for the claims as necessitated by amendment. Applicant presents a problem in the art that when certain packets are divided into segments, some of these segments may require a higher error correction scheme based on the error resistance of a particular segment (e.g., an MPEG segment may be resistant to errors while a header portion may have no error resistance capability thus requiring higher error correction). In the prior art this is very similar to the concept of "unequal error protection" (UEP). In addressing applicant's arguments in the response filed 12/05/03, applicant has amended the claims to further recite that the error resistance is determined at least by the content of a packet segment. Applicant's amendment is supported at least at the bottom of page 4 through the middle of page 5 in applicant's specification. For example, applicant discloses various

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embodiments including applying an error resistance to a header portion of a packet and/or based on the type of protocol such as TCP and UDP.

In view of the cited prior art, *Elaoud et al.* teaches that an error correction scheme can be applied to each packet segment but is silent or deficient to providing error resistance determined at least by the content of a packet segment. By way of example, *Adolph et al.* cures the above-cited deficiency by disclosing that various error correction schemes can be applied based on stream where each stream can contain various types of information (e.g., one stream can contain header information which requires a higher error correction scheme). Thus *Adolph* provides the support and motivation that the error resistance is determined at least in part by the content of the information in a stream such as a header (e.g., see column 2, lines 1-8). In other words, some streams carry more “important” information than others and thus require different levels of error correction.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1, 3, 5, 7, 9 and 12-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over “MPEG-4: An Object-based Multimedia Coding Standard supporting Mobile Applications” by Puri et al. (“*Puri*”) in view of “Adaptive Use of Error-Correcting Codes for Real-time Communication in Wireless Networks” by *Elaoud et al.* and U.S. Patent No. 5,825,430 A to *Adolph et al.* (“*Adolph*”).

As to **claim 1 and claim 14**, Examiner notes protocol encapsulation and multiplexing in general is well known in the art such that “dividing a packet to be transmitted into segments to form a plurality of packet segments” is well known in the art prior to applicant’s invention. By way of example, *Puri* discloses segmenting and encapsulating packets (using a broad but reasonable interpretation of the word “packet”) in figure 28 on page 45. For example, the reference shows that an IP Packet can be un-encapsulated into its respective Access Units (i.e., divided into a plurality of packet segments – each packet segment corresponding to an Access Unit) and then re-encapsulated into another (preferably smaller) packet segments (e.g., a FlexMux packet using a simple, single-object PDU shown in figure 29, corresponding to either an ALL2 ATM packet or H.223 packet). With respect to error correction, *Puri* discloses in section 4.4.7 (page 30) that:

“Due to the channel specific nature of the degree and type of error correction needed, MPEG-4 is not likely to recommend a specific error correction method, but leave it up to the chosen data transport layer to implement the needed technique. Further, error concealment strategies although encouraged are not standardized by MPEG-4; perhaps the work done on MPEG-2 can be useful.”
[page 30]

As such, the reference provides motivation to use error correction but does not elaborate on how said error correction is to be applied in the system (only that it could be applied to the data transport layer referred to by *Puri* as the Transport Multiplexing or “TransMux” layer).

Wang presents various error control and concealment schemes. In general, *Wang* presents two categories for error detection (and correction or concealment): those

performed at the transport coder/decoder and those at the video decoder [page 977].

Hence presented by *Wang* is various schemes for error detection such that in using this reference in combination, a prima facie case of obviousness can be established such that it would have been obvious for a skilled artisan prior to applicant's invention to select one (or more) of the error detection schemes proposed and apply this error correction scheme at the transport layer (i.e., the Transport or Multiplexing or "TransMux" layer as disclosed by *Puri*) based on characteristics of the network (i.e., the "error resistance").

By way of further example, examiner notes that *Elaoud et al.* in "Adaptive Use of Error-Correcting Codes for Real-time Communication in Wireless Networks" supports this case of prima facie obviousness. *Elaoud et al.* discloses an adaptive method for error-correction for "error resistance" networks as defined by applicant in applicant's specification on page 13, lines 1-8 for a network that is characterized as "high-bit-error rate, limited bandwidth, and intermittent connectivity" [page 548, lower left hand column] for transporting video services including MPEG [page 549, lower left hand column]. Emphasis is placed on the section entitled "Model of the Error-Recovery Scheme" on the right hand side of page 549 which concludes that "*In contrast, in this paper, we assume the sender [i.e., encoder] can use any one of a given set of error-correcting codes, ..., in each of its transmissions*". Examiner notes that the error-correction codes in the reference are based on the characteristics of the network (i.e., the "error resistance"). Thus *Elaoud et al.* provides a clear motivation for providing a different error correction scheme for each of the packet segments. However, *Elaoud et al.* teaches that an error correction scheme can be applied to each packet segment but is

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silent or deficient to providing error resistance determined at least by the content of a packet segment. Examiner notes that it also would have been obvious to someone skilled in the art prior to applicant's invention to apply an error correction scheme where the error resistance is determined at least by the content of each packet segment. By way of example, *Adolph* cures the above-cited deficiency by disclosing that various error correction schemes can be applied based on stream where each stream can contain various types of information (e.g., one stream can contain header information). Thus *Adolph* provides the support and motivation that the error resistance is determined at least in part by the content of the information in a stream such as a header (e.g., see column 2, lines 1-8). In particular, one skilled in the art would be motivated to provided error correction based on the error resistance as determined by the content of the packet since different packet segments carry more "important" information than others and thus require different levels of error correction. *Adolph* discloses this motivation e.g., at column 2, lines 1-13 for an MPEG stream.

As to **claim 15**, noted in the rejection for claim 1 is transmitting a packet such that it would have been obvious to a skilled artisan to do the reverse for receiving a packet prior to applicant's invention. Specifically, *Puri* discloses transmitting and receiving packets via the Transport Multiplexing layer or "TransMux" layer as disclosed by *Puri*. Noted in the *Puri* reference is that error correction schemes can be applied to this layer. *Wang* provides various types of error correction schemes that can be applied to this layer. Furthermore, examiner notes that it would have been further obvious to apply at least one

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error correction scheme (i.e., select an error correction scheme) at the decoder (i.e. the receiving side). For example, *Wang* notes that

"Another method for error detection at the transport level is to use FEC. In this method, error-correction encoding is applied to segments [i.e., the application units as referred to by Puri] of the output bit stream of the encoder. At the decoder, error-correction decoding is employed to detect and possible correct some bit errors." [page 977]

In other words, examiner notes that when receiving a packet segment, should a certain type of error correction have been applied to said received packet segment, then based on the predetermined structure of the packet, the information of the packet can then be applied along with the error correction method to see if any errors exist.

As to **claim 5**, in addition to the reasoning presented in the rejections for claims 1 and 2 respectively, *Wang* goes on to further illustrate (in reference to the FEC example mentioned previously in the rejection for claim 2) that H.223 uses FEC for both the multiplex packet header and the payload to detect errors in the header and the payload, respectively (i.e., using an error correction scheme based on information in a field, in this case an 18-bit FEC code of 493 bits for error detection and correction) [*Wang*, page 977].

As to **claims 3, and 7**, noted by *Puri* is support for the H.245 protocol in that the H.245 protocol is used as a control protocol for capability negotiation [*Puri* page 4]. Noted specifically is that this protocol can be used with H.223 packets for error correction [*Puri* page 6]. Thus examiner notes that it would have been obvious to one skilled in the art prior to applicant's invention to use the H.245 protocol to negotiate the error correction scheme prior to sending the packets as is known by a skilled artisan.

As to **claims 9 and 12-13**, noted in *Wang* is providing error correction for the header, payload and/or both [page 977]. As such, examiner notes that it would have been obvious to use a selection scheme that encompassed a header, payload or both as is well known in the art. Such headers could also include a port number as well for a particular application.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- **US006490705B1** discloses receiving MPEG video over the Internet where various segments can apply different error correction schemes based on the type of packet (i.e., error resistance). Note the date of filing for the application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derrick W. Ferris whose telephone number is (703) 305-4225. The examiner can normally be reached on M-F 9 A.M. - 4:30 P.M. E.S.T.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on (703) 308-5340. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 305-3900.

Derrick W. Ferris
Examiner
Art Unit 2663

DWF


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